thermostat II

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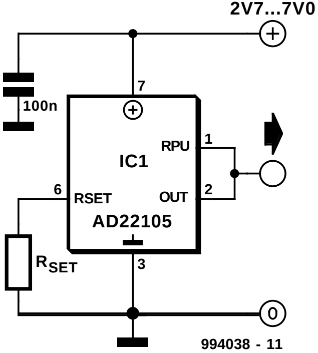

G. Kleine

The Type AD22105 from Analog Devices is an integrated circuit that contains a temperature sensor, a threshold comparator with hysteresis and an output stage. A single external resistor, R_{SET} allows setting the tripping threshold accurately anywhere between –40 °C and +150 °C. The value of R_{SET} is calculated with

$$R_{SET} = 39\times10^{6}/(t_{SET}+281.6)–90.3\times10^{3},$$

where t_{SET} is the numerical value of the trip temperature and R_{SET} is in ohms. This gives values of R_{SET} of, for instance, 47.5 kΩ for a trip temperature of 0 °C, 36 kΩ for 25 °C, and 12 kΩ for 100 °C.

The internal comparator trips when the ambient temperature measured by the sensor exceeds the set limit. The maximum error is ±2 °C at 25 °C and ±3 °C over the entire temperature range. The hysteresis, which prevents rapid operation of the comparator, is set at 4 °C during production.

The AD22105 needs a supply voltage of 2.7–7.0 V. Since the dissipation at 3.3 V is only 230 µW, the error caused by this is negligible. The low dissipation makes the device ideally suited for battery operation.

The output stage is an open-collector n-p-n transistor with the emitter at ground potential. A pull-up resistor of 200 kΩ may be connected between pin 1 and pin 7. The transistor comes on when the ambient temperature exceeds the set limit. The output may be connected directly to low-current LEDs and CMOS inputs.

The AD22105 is housed in a SO8 case.

Further information may be had from http://www.analog.com

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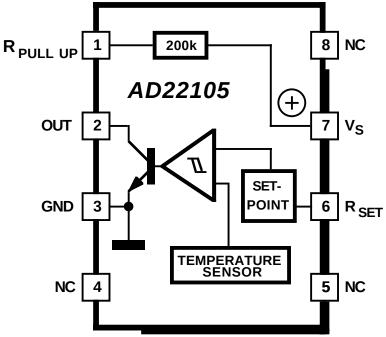

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